

REMARKS/ARGUMENTS

As stated in the paragraph bridging pages 5 and 6 of the application, the present invention is directed to pest control formulations that work through insect communication disruption, and not with insect-attracting insecticide compositions for mass attraction and killing methods. Please also see the first full paragraph on page 3 of the specification. The formulation is based on insect sex pheromones.

A sex pheromone typically does not consist of a single compound but includes several compounds or components. In other words, a sex pheromone is typically a mixture with a predetermined composition. This composition is very important for male insects to identify females of their species by the sex pheromone. If one releases a component of the sex pheromone into air to change the composition, males will not be able to detect whether or not there are females near them. When males cannot find their females, they cannot reproduce.

Among the components of a sex pheromone, a few particular components are especially useful to disturb male insects, when one or two of the components are released into air. The inventors employed these particular components to prepare exemplary formulations.

For example, please see Example 6 of the present application. A formulation to disturb male diamondback moths is prepared in this example. A short search of the internet reveals that the sex pheromone of the diamondback moth is comprised of Z-11-16AC, Z-11-16AL, Z-11-16OH, Z-9-14OAc, Z-9-14OH, and some other compounds. The formulation prepared in Example 6 contains (Z)-11-hexadecenyl acetate (Z-11-16AC) and (Z)-11-hexadecenal (Z-11-16AL), the two effective components selected from the compounds listed above. When these components are released into air, they will change the composition of the sex pheromone of the diamondback moth around the releasing point, which will largely check the moths' reproduction in the area.

The present invention relates to a formulation comprised of a specific substrate and at least one particular component of a sex pheromone, which is capable of releasing the component in a sustained way into air over a long period of time. Sustained release is very important in insect-communication disturbance methods because the breeding season of a pest insect is often long, and male pest insects must be kept disturbed and unable to find their females as long as the season lasts.

New independent claim 25 includes the term "an insect-derived sex pheromone component for communication disturbance". The term "sex pheromone component" is found in the explanation of "communication disturbance method" in the second full paragraph on page 3 of the application. The term included in claim 25 is made of these terms plus "insect-derived". This claim also states that the substrate is a molded body formed from the powder. Support for this limitation is found in the first full paragraph on page 15 of the specification.

New claims 30-32 recite specific compounds for the pheromone component. These compounds are found in the examples. New claims 33-42 recite the size and shape of the molded body, basis for which is also found in the examples.

Claims 43 and 45 recite particular types of binders.

Claim 45 recites a method for preparing an insect communication-disturbing formulation.

Consider now the prior art. Dodman teaches nothing about insect communication disturbance because his animal litter must attract the animal to make it use the litter: The animal litter should simply contain a whole sex pheromone with the proper composition, and not a pheromone component for communication disturbance.

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Also, Dodman teaches that the earth has a particular size in the range of about 10 to 140 mesh USS, in lines 56-59 in column 11. About 10 to 140 mesh corresponds to about 0.181 mm to 2.54 mm. Thus, the particle size disclosed by Dodman is much smaller than the size included in claims 33-44. Reading the Dodman document, the skilled artisan would never have employed adsorbents with a larger size, e.g. about 150 mm. Domesticated animals such as cats and dogs would not be comfortable on a litter made of such large molded bodies, and they would not use the litter.

Puterka discloses a pesticide delivery system that includes particulate material with a size of about 10 microns or less, the surface of which is coated with a pesticide including a pheromone. The system is applied onto a plant. It is possible to apply a system including particulate material with a size of about no more than 10 microns, essentially in the form of powder. However, it would be absolutely impossible to apply on a plant a formulation made of molded bodies.

Please note also that Puterka teaches a pesticide delivery system containing an insecticide and a pheromone, which employs an attract and kill mechanism. See lines 7-9 in column 4. This mechanism is different from an insect communication-disturbance mechanism. Although Puterka is not specific about the kinds of the compounds or components of the pheromone, a sex pheromone with the proper composition must be employed in this delivery system, in order to attract target pest insects. In fact, Puterka teaches nothing about insect communication disturbance. It is natural because Puterka's system forms a continuous film on the surface of a plant and thus protects the plant from insect pests. Therefore the technical idea of Puterka's invention is completely different from that of the present invention.

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Applicants respectfully submit that the invention as now claimed would not have been obvious from Puterka or the combination of Puterka with Dodman.

Respectfully submitted,
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